



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:

Kim et al.

Application No.: 10/071,903

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For: SIMPLE BLOCK SPACE TIME
TRANSMIT DIVERSITY USING
MULTIPLE SPREADING CODES

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Examiner: Thai D. Hoang

**APPEAL BRIEF TO THE BOARD OF PATENT APPEALS
AND INTERFERENCES PURSUANT TO C.F.R. §41.37(c)**

Mail Stop Appeal Brief -Patents
Commissioner for Patents
P.O. Box 1450
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Sir:

Further to the November 14, 2007 Notice of Appeal, the Appellant hereby submits this Appeal Brief.

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(1) REAL PARTY IN INTEREST

In this Appeal, the real party in interest is the assignee of record, InterDigital Technology Corporation.

(2) RELATED APPEALS AND INTERFERENCES

Concurrently with this Appeal, Appellant is filing appeals in related Application Numbers 09/999,287, 10/071,917, 10/077,076, 10/077,565, 10/079,107, and 10/107,465. Apart from those Applications, Appellant and the undersigned representative do not know of any other appeal, interference, or judicial proceeding that is related to, directly affects, is directly affected by, or has a bearing on decision of the Board of Patent Appeals and Interferences (hereinafter the "Board" or the "Board of Appeals") in this Appeal.

(3) STATUS OF THE CLAIMS

Claims 1-4 and 13-14 are rejected. Claims 1-4 and 13-14 are the subject of this Appeal and are attached in the Claims Appendix. No other claims are pending.

(4) STATUS OF THE AMENDMENTS

Appellant filed a Reply on June 28, 2007, pursuant to 37 C.F.R. §1.111, subsequent to the non-final rejection mailed April 24, 2007, wherein the Appellant amended claims 1 and 13 and argued the allowability of pending Claims 1-4 and 13-14. On August 15, 2007, a final rejection issued finally rejecting claims 1-4 and 13-14.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 1

Claim 1 is directed to a method for a base station to transmit a data field of symbols (see page 3, paragraphs [00016] and [00017], and Figures 2 and 3). The method includes generating a first data field of symbols (see page 4, paragraph [00023],

page 5, paragraph [00030], and Figures 2 and 3), encoding the first data field producing a second data field having complex conjugates of the symbols of said first data field (see page 5, paragraph [00023] and Figure 2), spreading said first and second data fields, wherein said first data field is spread using a first channelization code that is uniquely associated with a first antenna and said second data field is spread using a second channelization code—that is uniquely associated with a second antenna (see page 4, paragraph [00024], pages 5-6, paragraph [00030], and step 306 of Figure 3), and transmitting an RF signal including said first and second spread data fields over the first and second antennas (see page 6, paragraph [00030] and step 308 of Figure 3).

Dependent Claim 2

Claim 2 is directed toward the method of Claim 1, further including the scrambling of the first and second spread data fields by a scrambling code associated with the base station (see step 307 of Figure 3 and page 6, paragraph [00030]).

Dependent Claim 3

Claim 3 is directed toward the method of Claim 2 wherein the symbols of the first data field of symbols are grouped into a first and second sub-data field (see step 302 of Figure 3 and page 5, paragraph [00030]).

Dependent Claim 4

Claim 4 is directed toward the method of Claim 3 wherein the symbols of the second data field of symbols are grouped into a third and fourth sub-data field (see step 302 of Figure 3 and page 5, paragraph [00030]). The third sub-data field is the negative complex conjugate of said second sub-data field and said fourth sub-data field is the complex conjugate of said first sub-data field (see page 4, paragraph [00023]).

Independent Claim 13

Claim 13 is directed toward a method for a base station to transmit a data field of symbols including a transmitter (see page 6, paragraph [00033], and Figures 5 and 6). The method generates a first data field of symbols (see page 6, paragraph [00033]). The first data field is spread using a first channelization code to produce a first spread data field wherein the first channelization code is uniquely associated with a first antenna (see page 6, paragraph [00033], page 7, paragraph [00038], and step 604 in Figure 6). The first data field is spread using a second channelization code producing a second spread data field wherein the second channelization code is uniquely associated with a second antenna (see page 6, paragraph [00033], page 7, paragraph [00038], and step 604 in Figure 6). An RF signal including the first and second spread data fields is transmitted over a first and second antenna (see page 7, paragraph [00038], and step 606 in Figure 6).

Dependent Claim 14

Claim 14 is directed to the method of claim 13, further including the steps of scrambling the first and second spread data fields by a scrambling code associated with the transmitter. (see page 7, paragraph [00038], and step 605 in Figure 6).

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-4, 13 and 14 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4, 13 and 14 of various copending Applications. The Appellant is willing to submit a terminal disclaimer to overcome the rejections over the claims of the Applications cited if the Application is otherwise allowable.

Claim 1 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Ylitalo et al. (U.S. Patent No. 6,775,260 B1) in view of Dabak et al. (U.S. Patent No. 6,775,260 B1). Claims 2-4 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ylitalo et al. in view of Dabak et al., and further in view of Akiba et

al. (U.S. Patent No. 6,721,300). Claim 13 stands rejected under 35 U.S.C. §102(e) as being anticipated by Dabak et al. (U.S. Patent No. 6,594,473). Claim 14 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Dabak et al. (U.S. Patent No. 6,594,473) in view of Akiba.

(7) ARGUMENT

Claim 1 Meets the Requirements of 35 U.S.C. §103(a) as being patentable over Ylitalo et al. (U.S. Ref. No. 6,788,661) in view of Dabak et al. (U.S. Patent No. 6,775,260 B1).

The Ylitalo reference discloses an adaptive beam-time coding method and apparatus where a diversity encoder (10) receives an input signal (SIN) which contains a first symbol (S1) and a second symbol (S2). The diversity encoder performs an operation on both symbols and outputs S1 and -S2* onto a first channel (CH1) into a complex multiplier (12) and S2 and S1* onto a second channel (CH2) into a complex multiplier (14), which then impart a different spread spectrum code. In the Ylitalo reference, all input signals first go through a diversity encoder where an operation is performed prior to forwarding to the complex multipliers.

There is no disclosure, teaching or suggestion in the Ylitalo reference that a first channelization code that spreads a data field *is uniquely associated with a first transmission antenna* and a second channelization code that spreads a data field *is uniquely associated with a second transmission antenna*, as is recited in the Applicant's independent claim 1.

The Dabak et al. reference does not disclose, teach, nor suggest anywhere the use of different channelization codes. Indeed, in figure 2, the Dabak et al. discloses, *inter alia*, encoded symbols D_1^1 and D_2^1 undergoing the *same* "user specific code" C^1 . There is no teaching whatsoever that any different channelization code is used on the symbols in the Dabak et al. reference. And notably, there is no teaching in the Dabak et al. reference of a first channelization code being uniquely associated with a first transmission antenna and a second channelization code being uniquely associated with

a second transmission antenna. Accordingly, the Dabak et al. reference does not cure the deficiencies of the Ylitalo et al. reference.

Accordingly, the Applicant's independent claim 1 is patentable over the Ylitalo et al. and Dabak et al. references, whether taken alone or in combination with one another.

Claims 2-4 Meet the Requirements of 35 U.S.C. §103(a) as being patentable over Ylitalo et al. (U.S. Ref. No. 6,788,661) in view of Dabak et al. (U.S. Patent No. 6,775,260 B1), and further in view of Akiba et al. (U.S. Patent No. 6,721,300).

The Akiba reference discloses an encoding method and diversity transmitter. As with the Ylitalo and Dabak references, there is no disclosure, teaching or suggestion in the Akiba reference that a first channelization code that spreads a data field is *uniquely* associated with a first antenna and a second channelization code that spreads a data field is *uniquely* associated with a second antenna, as is recited in the Applicant's independent claim 1.

Accordingly, the Akiba reference fails to cure the deficiencies of the Ylitalo and Dabak references, and the Applicant's independent claim 1 is patentable over the Ylitalo, Dabak and Akiba references, whether taken alone or in any combination with one another.

Since Applicant's claims 2-4 depend from Applicant's patentable independent claim 1, they are therefore patentable for at least the same reasons as Applicant's patentable independent claim 1.

Furthermore, claim 2 recites scrambling the first and second spread data fields by a scrambling code associated with the base station, which is not disclosed, taught or suggested by the Ylitalo, Dabak or Akiba references taken alone or in any combination with one another. Therefore, claim 2 is patentable for this reason as well as its dependence from patentable independent claim 1.

Claim 13 Meets the Requirements of 35 U.S.C. §102(e) as being patentable over Dabak et al. (U.S. Ref. No. 6,594,473).

The Dabak reference discloses spreading data on more than one antenna using the *same* walsh code. Referring to Figure 4 of Dabak, Walsh code one (W_1) is used to spread the data transmitted on both antenna one *and* antenna two. Walsh code two (W_2) is used to spread the data transmitted on both antenna three *and* antenna four. There is no disclosure, teaching, or suggestion that any different channelization code is used on the symbols in the Dabak reference. Furthermore, there is no disclosure, teaching, or suggestion in the Dabak reference of any channelization code being uniquely associated with a particular antenna.

Accordingly, the Applicant's independent claim 13 is patentable over the Dabak reference.

Claim 14 Meets the Requirements of 35 U.S.C. §103(a) as being patentable over Dabak et al. (U.S. Patent No. 6,594,473), in view of Akiba et al. (U.S. Patent No. 6,721,300).

The Akiba reference fails to cure the deficiencies of the of the Dabak reference in relation to the Applicant's independent claim 13. Accordingly, the Applicant's independent claim 13 is patentable over the Dabak and Akiba references, whether taken alone or in combination with one another.

Since claim 14 depends from the Applicant's patentable independent claim 13, it is therefore patentable for at least the same reasons as patentable independent claim 13.

Furthermore, claim 14 recites "scrambling said first and second spread data fields by a scrambling code associated with said transmitter" which is not disclosed, taught or suggested by the Dabak or Akiba references taken alone or in combination with one another. Therefore, claim 14 is patentable for this reason as well as its dependence from patentable independent claim 13.

(8) CONCLUSION

For the reasons stated above, pending claim 1 meets the requirements of 35 U.S.C. §102(e) as patentable over the Ylitalo et al. (U.S. Ref. No. 6,788,661) in view of Dabak et al. (U.S. Patent No. 6,775,260 B1) references. Pending claims 2-4 meet the requirements of 35 U.S.C. §103(a) as patentable over the Ylitalo et al., Dabak et al., and Akiba et al. (U.S. Patent No. 6,721,300) references, whether taken alone or in any combination with one another. Claim 13 meets the requirements of 35 U.S.C. §102(e) as being patentable over Dabak et al. (U.S. Ref. No. 6,594,473). Claim 14 meets the requirements of 35 U.S.C. §103(a) as being patentable over Dabak et al. (U.S. Patent No. 6,594,473), in view of Akiba et al. Accordingly, the final rejection of the claims under 35 U.S.C. §102(e) and 35 U.S.C. §103(a) should be reversed.

Respectfully submitted,

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(9) CLAIMS APPENDIX

(PENDING CLAIMS OF U.S. PATENT APPLICATION NO. 10/071,903)

1. A method for a base station to transmit a data field of symbols comprising the steps of:

generating a first data field of symbols;

encoding said first data field producing a second data field having complex conjugates of the symbols of said first data field;

spreading said first and second data fields, wherein said first data field is spread using a first channelization code that is uniquely associated with a first antenna and said second data field is spread using a second channelization code that is uniquely associated with a second antenna; and

transmitting an RF signal including said first and second spread data fields over the first and second antennas.

2. The method of claim 1 further comprising the step of scrambling said first and second spread data fields by a scrambling code associated with said base station.

3. The method of claim 2 wherein the symbols of said first data field of symbols are grouped into a first and second sub-data field.

4. The method of claim 3, wherein the symbols of said second data field of symbols are grouped into a third and fourth sub-data field, wherein said third sub-data field is the negative complex conjugate of said second sub-data field and said fourth sub-data field is the complex conjugate of said first sub-data field.

5-12. (Canceled).

13. A method for a base station to transmit a data field of symbols including a

transmitter, the method comprising the steps of:

generating a first data field of symbols;

spreading said first data field using a first channelization code producing a first spread data field, wherein the first channelization code is uniquely associated with a first antenna;

spreading said first data field using a second channelization code producing a second spread data field, wherein the second channelization code is uniquely associated with a second antenna; and

transmitting an RF signal including said first and second spread data fields over the first and second antennas.

14. The method of claim 13 further comprising the steps of scrambling said first and second spread data fields by a scrambling code associated with said transmitter.

15-18. (Canceled).

(10) EVIDENCE APPENDIX

None.

(11) RELATED PROCEEDINGS APPENDIX

None.